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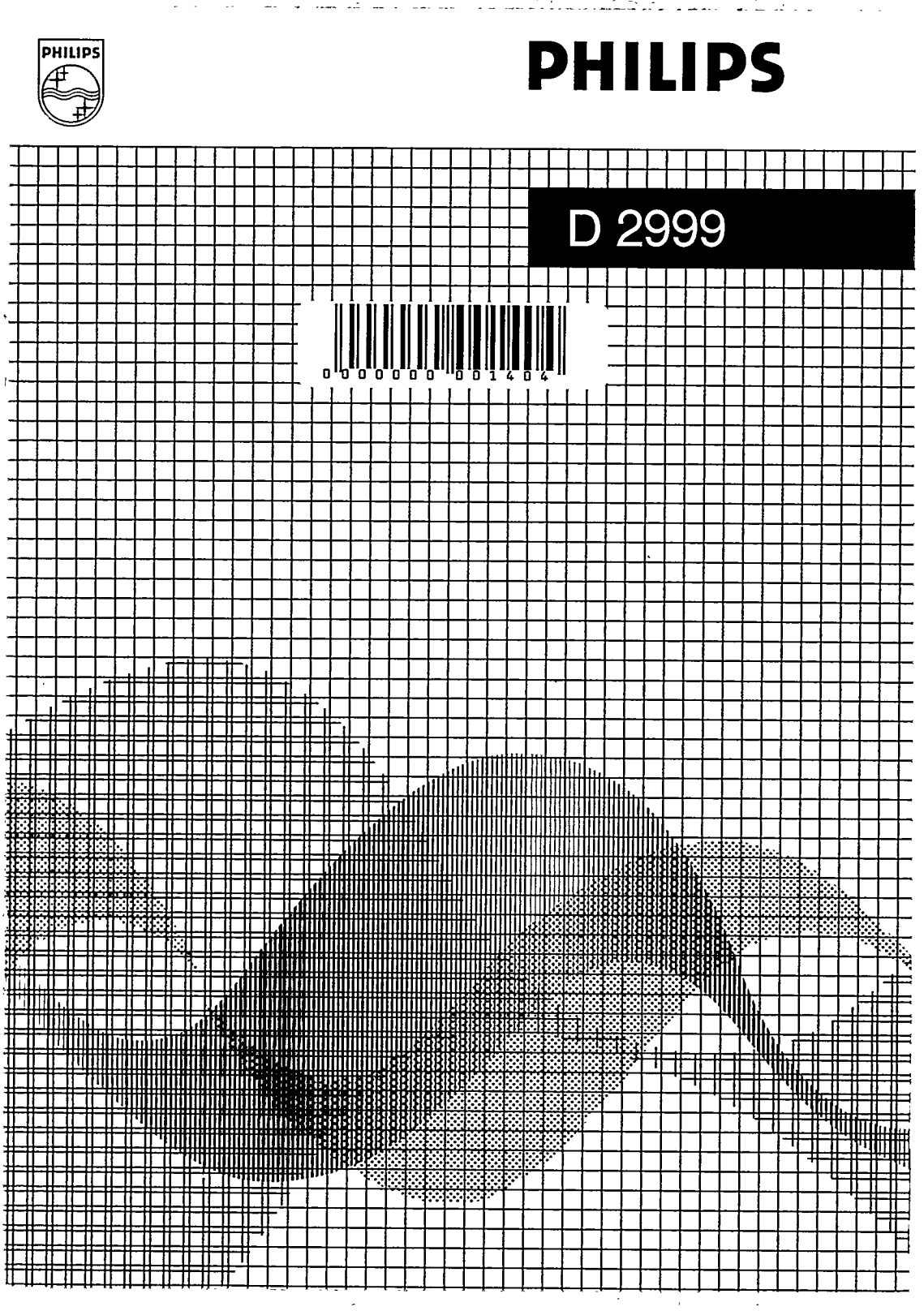

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INTRODUCTION

This booklet gives as much information as possible on the actual OPERATION of this world receiver. Specific details, related with the 'world' of SW reception, are explained in the separate booklet 'WORLD RECEIVER'.
For more detailed information we refer to the 'World Radio TV Handbook', an annual publication of Billboard A.G. (Editorial address: P.O. Box 88, DK-2650 Hvidovre, Denmark), available in Great Britain from Fountain Press Ltd., 65 Victoria Street, Windsor, Berkshire SL4 1EH.
Most countries have a local SW Broadcasting Organisation.
For Great Britain you can apply to BBC Publicity, P.O. Box 76, Bush House, London WC 2B 4PH, England for further information.

CONTROLS AND CONNECTIONS

Fig. 1

① Main speaker on/off switch
② Signal strength/battery check button
③ Light button
④ Main speaker
⑤ External DC supply socket
⑥ Telescopic aerial
⑦ Waverange buttons with LED indicators
⑧ Radio on/off button
⑨ Carrying handle
⑩ Fixing screw for carrying handle
⑪ Preset buttons
⑫ Tuning knob
⑬ Frequency keybord
⑭ Gain control
⑮ Start/stop button for search facility
⑯ BFO control
⑰ Gain on/off switch
⑱ BFO on/off switch
⑲ Headphone socket
⑳ Local/distant switch
㉑ Narrow/wide bandwidth switch
㉒ Treble control
㉓ Clock/alarm and display function buttons
㉔ Bass control
㉕ LCD display
㉖ Volume control
㉗ Field strength/battery check meter
㉘ Monitoring speaker
㉙ External aerial connections
㉚ Battery compartment for supply batteries
㉛ AM external aerial switch
㉜ FM external aerial switch
㉝ Line out DIN socket
㉞ Line out phono socket
㉟ External loudspeaker socket
㊱ Mains socket
㊲ Mains socket plate
㊳ 12 hr./24 hr. switch
㊴ 9/10 kHz switch
㊵ Battery compartment for memory batteries
The type plate is in the battery compartment.

IMPORTANT

• BEFORE inserting the memory batteries a selection of 12 or 24-hour mode is made with switch ㊳. Operating in the 12-hour mode is confirmed by the AM/PM sign on the display ㉕.
• Also the so-called grid of the standardized channel spacing (9 or 10 kHz for 150 - 1608 kHz) must be selected with switch ㊴ BEFORE inserting the memory batteries. Selection is confirmed via search steps of 9 or 10 kHz within the given range, when you will operate the search button ⑮ later on (see chaper Automatic Search).
• If you wish to change the settings of the switches ㊳ and ㊴, when the batteries already have been inserted, you must first remove the memory (and other) batteries and/or the mains cable and press the LIGHT button ③ to discharge the memory, or wait a few minutes until the memory has been discharged and THEN make your new selection.

SUPPLY

Batteries

Six supply batteries of the R20, UM-1 or D type are required for the radio section and three memory batteries of the R6, UM-3 or AA type.

Insertion of batteries

• Remove the lids of the battery compartments ㉚ and ㊵.
• FIRST insert the three MEMORY batteries of the R6, UM-3 or AA type and THEN the other six supply batteries of the R20, UM-1 or D type as indicated in the figure.
• Replace the lids.
Note: MEMORY batteries must ALWAYS be used. The supply batteries are required only in case of battery operation.

• The condition of the supply batteries can be checked with meter ㉗ when switch ② is in the ***unlocked*** position. When checking the batteries, the mains cable or car battery cable must be disconnected. After checking the battery condition, put switch ② to the pressed position again, in order to prevent the batteries from being under load.
The batteries should be replaced if the pointer of meter ㉗ reaches the 'empty' sign. Remove the supply batteries when the radio will not be battery-operated for a long time.
• Replace the batteries for the memory when the 'EMPTY' sign appears in display ㉕.
Note: The battery life of the memory batteries is strongly dependent on the presence of supply batteries, car battery supply, or mains supply.
If ***only*** memory batteries are used without any other supply source, the battery life of the memory batteries will be about two months.
Under normal conditions however, when the set is used with supply batteries or mains supply, the battery life will be about one year.
If the memory batteries are replaced when the radio is switched on, then the information of time, alarm time and preselected frequencies will be preserved.

Car battery supply
• A car battery can be connected to socket ⑤ with a voltage of 9 - 14 Volts.
• Use a special power-supply cable for this purpose. Although this receiver has been protected against an incorrect polarity connection, you should nevertheless check with your dealer or garage for an adequate connection to your 12 V battery ('—' to centre pin).

Mains supply
For mains operation, plate ㊲, covering the mains lead socket ㊱, has two positions: for 220/240 Volt and 110/127 Volt. It is important to ensure that the voltage setting on the receiver corresponds to the local mains voltage. If it does not, unscrew plate ㊲ and replace it the other way round. Connect the set to the mains with the mains lead supplied.
• To disconnect the set from the mains completely, withdraw the mains plug from the wall socket. The set automatically switches to battery power when the mains lead is disconnected.

Important note for users in Great Britain:
When fitting a mains plug to the mains lead proceed as follows: The wires in the mains lead are coloured with the following code: Blue = Neutral, Brown = Live.
As these colours may not correspond with the colour markings identifying the terminals in your plug proceed as follows: The Brown wire must be connected to the terminal which is marked with the letter L or coloured Red. The Blue wire must be connected to the terminal which is marked with the letter N or coloured Black.
Note: This apparatus must be protected by a 3 Amp Fuse if a 13 Amp plug is used or, if any other type of plug is used, by a 5 Amp Fuse either in the plug or adapter or at the distribution board. If in doubt consult a qualified electrician.

AERIALS

LW and ***MW***: Built-in ferroceptor aerial. Due to the directional effect of the built-in aerial it may be necessary to rotate the set for optimum reception.
FM: Extend telescopic aerial ⑥, partly and angle for optimum reception, see Fig. 1 and 4.
SW: Extend telescopic aerial ⑥ fully and put it in a vertical position.

External aerials
If desired, an external aerial for FM reception and/or an aerial for AM reception, can be connected to the external aerial connections ㉙.
When connecting an AM aerial and an earth lead, the aerial is connected to the centre pin and the earth lead is connected to the outer connector.
For further information see the separate booklet 'World receiver'.
• When an external aerial is used, the external aerial switches ㉛ and ㉜ at the rearside of the receiver are set to the EXT. position.
Note: In the EXT position of the switches ㉛ and ㉜ the internal aerials are completely switched off, enabling to connect special direction finding equipment, which is available from specialised firms for shipping and yachting.

Connection to an amplifier or tape recorder
• The 'line out' sockets ㉝ or ㉞ can be connected to the 'aux' or 'tape' input of an amplifier. In that case the loudspeaker of the radio continues to work. If you wish to listen only via the connected amplifier, you can set the volume control ㉖ to MIN.
• Radio programmes can be recorded from socket ㉝ or ㉞.

Connection of a headphone
You can connect a headphone with a 6.3 mm jack plug and an impedance of 8-16 Ohm to socket ⑲. In that case the built-in (or external) loudspeakers are switched off.
The volume is controlled with control ㉖ and the tone with the controls ㉒ and ㉔.

Connection of an external loudspeaker
• An external speaker (4 ohm impedance) can be connected to socket ㉟.
• The main loudspeaker ④ is switched off when

connecting an external loudspeaker. The external loudspeaker can then be switched on and off with switch ①.
• The monitoring speaker ㉘ will always function when the radio is 'on'.

OPERATION

• Switch on the set with RADIO ON/OFF button ⑧. Now the receiver tunes to 87.5 MHz in the FM range or - if the set has already been operated before - to the last frequency received.
• Adjust the volume with 'VOLUME' control ㉖.
• Adjust the tone with the controls 'TREBLE' ㉒ and 'BASS' ㉔.

Illumination

• If battery power is used the display and meter can be illuminated by pressing button ③. The light will switch off automatically after a while.
• The display and meter will be illuminated continuously when the set operates on the mains or on a car battery. After switching off the set in this case, the display and meter will still be illuminated. The light will switch off automatically after a while.

Bandwidth switch

• Where two adjacent AM stations cause interference, switch the bandwidth switch ㉑ to 'narrow'.
• When receiving strong AM stations without interference, the bandwidth switch ㉑ may be set to 'wide', in order to obtain a better sound quality.

Field strength/battery check meter

• The field strength of a station can be checked with meter ㉗ when switch ② is in the depressed position.
• The condition of the supply batteries can be checked with meter ㉗ when switch ② is in the unlocked position. See also under the heading SUPPLY.

Tuning

There are several ways of tuning:
• If the exact frequency of the transmitter is known beforehand:

- by keying in the desired frequency on the frequency keybord ⑬, followed by EXECUTE.
The desired frequency appears on the display ㉕.

• If only the desired waverange is known, but NOT the exact frequency of the transmitter:
- by depressing one of the 14 waverange preselection buttons ⑦, followed by either tuning with tuning knob ⑫, or automatic search with button ⑮.

Tuning with the frequency keybord ⑬

Via frequency keybord ⑬ each desired frequency can be selected directly.
Example: the desired transmitter transmits at 5955 kHz (5.955 MHz).
• Successively depress the digits 5 - 9 - 5 - 5 and then 'EXECUTE'. Now the desired frequency appears on the display ㉕: 5955 kHz, the LED indicator with the corresponding waverange button ⑦ (49 m) will light up and the transmitter becomes audible if it is in the air and can be received locally.
You can also key in 5 - . - 9 - 5 - 5 followed by 'EXECUTE'.
You will receive the same transmitter but this time 5.955 MHz appears on the display.

Important: When keying in a frequency in the FM range, you should give the frequency in MegaHertz.
Examples: for 98.0 MHz you may depress only 9 - 8 - EXECUTE.
On the display ㉕ appears 98.00 MHz, the LED indicator with the corresponding waverange button ⑦ (FM) will light up and the transmitter becomes audible if it is in the air and can be received locally.
For 98.7 MHz you depress successively 9 - 8 - . - 7 - EXECUTE.
On the display ㉕ appears 98.70 MHz and the transmitter becomes audible.
If you depress successively 9 - 8 - 7 - EXECUTE, the set will tune to 987 kHz in the medium waverange.

Remark: If you key in an incomplete frequency or a frequency which is outside the range of the receiver, the word 'Error' will appear on display ㉕. The set will ignore the input and will remain on the preceding frequency. The diplay ㉕ will automatically return to the preceding frequency after a few seconds.

Waverange selection and indication

By depressing one of the 14 waverange preselection buttons ⑦ the set is automatically tuned to the lowest frequency in that particular waverange.
The LED indicator on the left side of each waverange button ⑦ will glow to indicate that particular waverange. When two LED's are glowing, it means that the frequency is between two waveranges.
Example: When the frequency 6746 kHz is chosen, both the 49 m LED and the 41 m LED will glow.
Under the heading 'WAVERANGES' the boundaries of the bands are given.

Tuning with tuning knob ⑫

If you want to tune with tuning knob ⑫, you can first select the desired waverange with one of the buttons ⑦ and then tune to the desired frequency with tuning knob ⑫.

However it is also possible to pass with the use of only knob ⑫ all waveranges without first selecting a specific waverange.

The frequency will appear on display ㉕.

When rotating the knob clockwise at 29999 kHz (26100 kHz for the /02 version) the frequency will jump to 87.5 MHz automatically without any manual switching to the FM range and vice versa.

Tuning speeds

With tuning knob ⑫ you can tune with three different speeds:

-When turning knob ⑫ slowly, each 'click' of the knob corresponds with 10 kHz higher or lower on the display in the FM range and 1 kHz in the other waveranges.

-When turning knob ⑫ at some speed, each 'click' of the knob corresponds with 20 kHz higher or lower on the display in the FM range and 2 kHz in the other waveranges.

-When turning knob ⑫ quickly, each 'click' of the knob corresponds with 100 kHz higher or lower on the display in the FM range and 10 kHz in the other waveranges.

Automatic Search within the waveranges

- When depressing the search button ⑮ the automatic search system will search upwards starting from the previously tuned frequency onwards.
- When a station is found of sufficient strength the search will be stopped and the station will be audible.
- As long as the system is searching the radio is muted.
- When depressing the search button ⑮ again, the automatic search system will stop.
- The search operates in the 14 waveranges LW, MW, 11× SW and FM, as given under the heading 'WAVERANGES'.

Note:

- When a frequency is not on the so-called grid of the standardized channel spacing, the automatic search system will jump first to the nearest fixed frequency grid point and search upwards from there onwards.
- The standardized channel spacing is 5 kHz for 2300 kHz - 26100 kHz (for all countries), 10 kHz on 150 - 1608 kHz for North and South America and 9 kHz on 150 - 1608 kHz for all other countries.

The 9 kHz or 10 kHz grid may be selected with switch ㊴ BEFORE inserting the memory batteries.

- If pressing the search button, when the set is tuned to a frequency in between two waveranges then the system will jump first to the lowest frequency in the next higher waverange. At the end of a complete run through a waverange the system will automatically switch from the end of that waverange to the beginning of the same waverange. If during 3 complete runs no station is found the search action will be stopped.
- If you want to stop the search action manually, this can be done either by pressing the search button ⑮, by tuning to another frequency, or by pressing one of the buttons 'FREQ', 'TIME', or 'ALARM' ㉓.

Depressing a waverange button ⑦ will also stop the automatic search.

Storing presets

With the buttons of preselection keyboard ⑪ sixteen presets can be stored in the memory of the receiver (and may also be changed at any time).

- Tune to the transmitter which you wish to store.
- Depress 'STORE PRESET', of preselection keyboard ⑪.
- Now 'PRESET' appears blinking for approx. 5 seconds on display ㉕.
- WITHIN THESE 5 SECONDS you successively depress (for instance) buttons A and 1 of presection keyboard ⑪. Now the preset has been stored in the memory under number A 1.

Next you tune to another transmitter; then you depress 'STORE PRESET' once again followed by A and then 2 of preselection keyboard ⑪. This transmitter has now been stored under number A 2.

In the same way you can store in total sixteen presets in the memory:

A 1, A 2, A 3, A 4, B 1, B 2, B 3, B 4, C 1, C 2, C 3, C 4, D 1, D 2, D 3 and D 4.

Recalling a preset station

You can recall a preset station by keying in the related letter/figure combination.

In case of switching over from one preset to the other, in a number of cases it will be enough to depress one single button:

if, for instance, you wish to switch from A 1 to B 1, you only need to depress button B. Later, if you want to change from B 1 to B 3, a press on button 3 of preselection keyboard ⑪ will be enough.

Note: If all sixteen combinations have been used, it is still possible to store a new preset. Then the old transmitter is then erased from the memory.

SINGLE-SIDE BAND MODULATION (SSB)

In many amateur transmitters including transmitters which are used for communication purposes and weather forecasts, etc. so-called single side band modulation is used (either 'lower side band' LSB, or 'upper side band' USB).
These single side band or SSB transmitters can be HEARD with a normal receiver but not be UNDERSTOOD.

For an understandable reception of an SSB transmitter an auxiliary oscillator (BFO or 'beat frequency oscillator') is required.
For more technical details see the booklet 'World receiver'.

Tuning to SSB transmitters

- Set the 'AM GAIN' switch ⑰ to 'MAN'.
- Turn 'AM GAIN' control ⑭ to 'MAX'.
- Increase the volume with 'VOLUME' control ㉖.
- Accurately tune to the frequency or to the maximum volume of the SSB transmitter (with BFO switch ⑱ still in the 'OFF' position).
- Set 'BFO' control ⑯ to the mid position.
- Switch on the auxiliary oscillator with BFO switch ⑱.
- Turn the VOLUME control ㉖ to 'MAX'.
- Decrease the AM gain with 'AM GAIN' control ⑭ until the meter ㉗ does not fluctuate.
- Vary the BFO frequency with BFO control ⑯ until the transmitter is received understandably.
- Check if the intelligibility increases by setting the bandwidth switch ㉑ to 'NARROW'.
- When very close to a transmitter, it may be necessary to depress distant/local selector switch ⑳ in order to reduce the sensitivity of the receiver.

Distant/local selector switch ⑳

By depressing distant/local selector switch ⑳ you can reduce the sensitivity of the receiver. This switch will usually be used when very close to a transmitter. In the 'local' mode you will receive only the local and/or very strong transmitters.

CLOCK

12 Hour or 24 Hour mode operation

A choice of 12 and 24-hour modes is available. BEFORE inserting the memory batteries select a mode with switch ㊳. Operating in the 12-hour mode is confirmed by the AM/PM sign on the display ㉕.

Actual Time setting

- Depress the 'TIME' button ㉓.
- Depress the 'SET' button ㉔. The indicator 'TIME' in the display ㉕ will start to blink. Moreover the display will show '00.00' of which the most left one will also blink.
- Depress ***FOUR*** buttons in the main keyboard ⑬; the first button for the tens of hours, the second one for the units of hours, the third one for the tens of minutes and the fourth one for the units of minutes. After each key-in the next zero will start blinking.

Note: When setting the time, a leading zero may NOT be omitted: when e.g. setting to 8.15 hours, you must key in 0 - 8 - 1 - 5 followed by 'EXECUTE'.

- In the 12-hours mode: set with the AM/PM selector ㉒ to the required part of the day-time.
- Depress the 'execute' button on keyboard ⑬. The blinking of the 'TIME' indicator in the display ㉕ will stop.

Alarm Time Setting

Setting of the alarm can be done in the same way as described for setting the actual time however the first button in the operational sequence is now the 'ALARM' button ㉓.
Then press 'SET' button ㉔. After pressing this button the 'ALARM' indicator in the display ㉕ will start blinking.

Switching the alarm on and off

- Press 'ALM ON/OFF' button ㉒.
- In the display ㉕ a (((O))) sign will be visible indicating that the alarm is switched on.

Switching Off the alarm tone

When the alarm tone sounds it can be switched off by depressing 'ALM ON/OFF' button ㉒. The sign (((O))) in display ㉕ will disappear. If the alarm tone is not switched off manually it is done automatically after 59 minutes.
Note: As the alarm feature operates from the radio batteries, accumulator or mains, continuity of power supply must be maintained for it to function.

Carrying handle (See Fig. 1)

The carrying handle ⑨ is detachable. Proceed as follows:
Unscrew both fixing screws ⑩ using a coin or similar. When both screws are loosened the handle can be removed. When replacing the carrying handle position it such that it is in a position with respect to the marking dot as shown and fix both screws again.

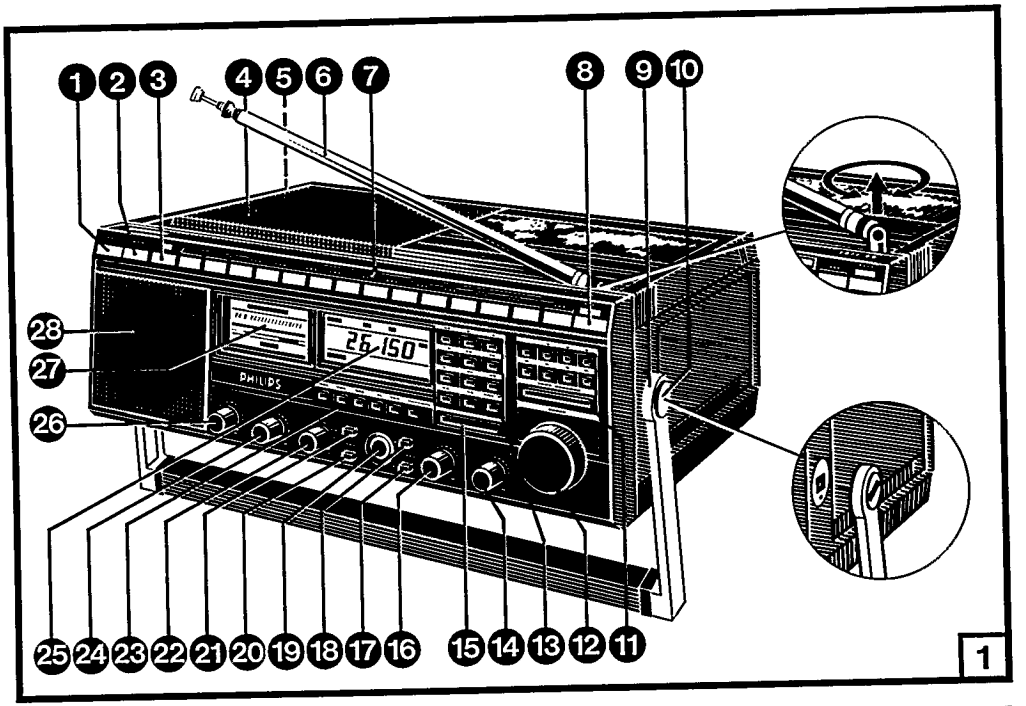
Important

- Do not expose the set or batteries to rain or moisture, or, for any great length of time, to excessive heat from heating equipment or direct sunshine, e.g. in motor cars parked in the sun.

WAVERANGES

Total frequency coverage for this set: 150 - 29999 kHz (for the /02 version up to 26100 kHz) and 87.5 - 108 MHz.

The waveranges are indicated by the glowing of one or two LED indicators. Two indicators will glow when a frequency is chosen outside the ranges listed below.
When only one LED glows, you are tuned to a frequency in one of the following ranges:
FM: 87.5 - 108 MHz
LW: 150 - 360 kHz
MW: 520 - 1608 kHz
120 meter from 2300 kHz to 2495 kHz
90 meter from 3200 kHz to 3400 kHz
60 meter from 4750 kHz to 5060 kHz
49 meter from 5950 kHz to 6200 kHz
41 meter from 7100 kHz to 7300 kHz
31 meter from 9500 kHz to 9900 kHz
25 meter from 11650 kHz to 12050 kHz
19 meter from 15100 kHz to 15600 kHz
16 meter from 17550 kHz to 17900 kHz
13 meter from 21450 kHz to 21850 kHz
11 meter from 25600 kHz to 26100 kHz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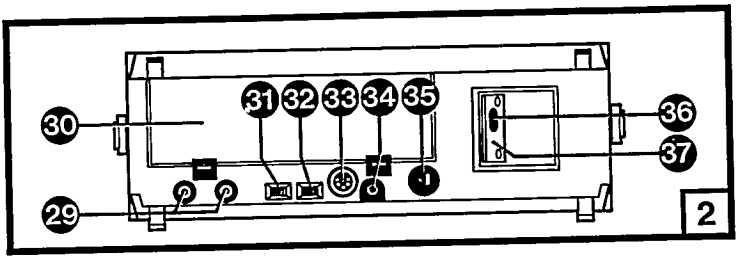
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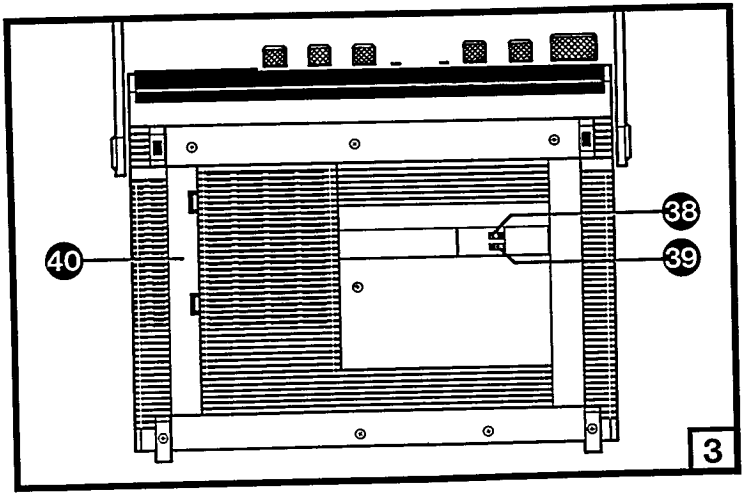
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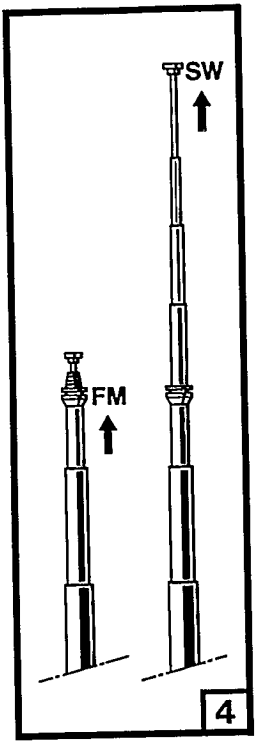
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FM

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